Lean Aerospace Initiative Could Significantly Improve Manufacturing Processes

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Payoff

Lean Aerospace Initiative (LAI) concepts are providing the nation's aerospace industry an opportunity to address the challenges posed by both reductions in DoD procurements and worldwide competition. Adoption of LAI principals and practices will allow the aerospace industry to meet customer requirements for affordability and responsiveness without sacrificing performance.

Accomplishment

The Lean Aerospace Initiative (LAI), managed through a consortia arrangement involving the Materials and Manufacturing Directorate, aerospace companies, and the Massachusetts Institute of Technology (MIT), is providing industry with a clearer understanding of the principles, priorities and data required to define important areas of enabling research and development, and to share experiences and knowledge. Reduced product cycle times, lower production costs and improved product quality are being achieved through LAI.

Background

The main objective of LAI is to develop a framework for implementation of enterprise-wide lean principles and practices that better support the nation's military aircraft needs over the next three decades. LAI traces its origins to the International Motor Vehicle Program (IMVP) conducted by MIT where a single manufacturer, Toyota, was used as a benchmark for lean implementation within the auto industry. With IMVP research acting as a catalyst, the U.S. auto industry responded by re-engineering management, design and manufacturing processes to become more competitive in the global market. The LAI was launched in 1993 to serve as a unique platform for linking all the stakeholders, providing a forum for interchange, and developing a growing database of practices and supporting information. LAI has substantially lowered costs and achieved shorter cycle times and significant quality improvements by re-engineering organizations and key processes. This includes all aspects of the product realization process, starting with Integrated Product/Process Development; focusing on improvements in product quality, waste minimization and response time; building strong supplier relationships through partnering and teaming; and using less of everything including design time, inventory, buffers, management layers, capital, cycle time and suppliers. The Directorate initiated an assessment with MIT and private industry on the applicability of "lean production" to the military aircraft industry, concluding that lean principles do apply and significant benefits are possible if lean practices are adopted. Senior leadership endorsed the initiative and to date, MIT has authored more than 80 publications as a result of LAI surveys, case studies and site visits. These publications served as a basis for the Lean Enterprise Model (LEM) which acts as the primary means of transitioning the results of LAI research into real application. The LEM provides a framework for identifying and evaluating lean practices and metrics in such a way that consortium members can understand the relative lean status changes.